



SCALES-paper N200416

Strategic Decision-Making in Small Firms: Towards a Typology of Entrepreneurial Decision-Makers

Petra Gibcus
Patrick A.M. Vermeulen
Jeroen P.J. de Jong

Zoetermeer, November, 2004

The SCALES-paper series is an electronic working paper series of EIM Business and Policy Research. The SCALES-initiative (Scientific Analysis of Entrepreneurship and SMEs) is part of the 'SMEs and Entrepreneurship' programme, financed by the Netherlands' Ministry of Economic Affairs. Complete information on this programme can be found at www.eim.nl/smes-and-entrepreneurship

The papers in the SCALES-series report on ongoing research at EIM. The information in the papers may be (1) background material to regular EIM Research Reports, (2) papers presented at international academic conferences, (3) submissions under review at academic journals. The papers are directed at a research-oriented audience and intended to share knowledge and promote discussion on topics in the academic fields of small business economics and entrepreneurship research.

address: Italiëlaan 33
mail address: P.O. Box 7001
2701 AA Zoetermeer
telephone: + 31 79 343 02 00
telefax: + 31 79 343 02 01
website: www.eim.nl

The responsibility for the contents of this report lies with EIM. Quoting numbers or text in papers, essays and books is permitted only when the source is clearly mentioned. No part of this publication may be copied and/or published in any form or by any means, or stored in a retrieval system, without the prior written permission of EIM.

EIM does not accept responsibility for printing errors and/or other imperfections.

Strategic Decision-Making in Small Firms: Towards a Typology of Entrepreneurial Decision-Makers

Petra Gibcus
EIM Small business research and consultancy
Italiëlaan 33
P.O. Box 7001
2701 AA Zoetermeer
The Netherlands
e-mail: pgi@eim.nl

Patrick A.M. Vermeulen
Tilburg University
Faculty of Social and Behavioral Sciences
Department of Organization Studies (S-164)
P.O. Box 90153
5000 LE Tilburg
The Netherlands
e-mail: Patrick.Vermeulen@uvt.nl

Jeroen P.J. de Jong
EIM Small business research and consultancy
Italiëlaan 33
P.O. Box 7001
2701 AA Zoetermeer
The Netherlands
e-mail: jjo@eim.nl

Abstract

Most changes in firms take place after a decision has been made. Obviously small firms are no exception to this, but how this decision-making process looks like is still an uncharted area of research. There are many studies that focus on the decision-making process of large firms, but only a few pay attention to small firms. The underlying quantitative study investigated the decision-making process in SMEs. Drawing upon a database of 646 firms across eight industries, this paper develops a typology of decision-makers in small firms. Five types of decision-makers are distinguished: daredevils, lone rangers, doubtful minds, informers' friends and busy bees.

Keywords: strategic decision-making, SMEs, typology, decision-makers

Strategic Decision-Making in Small Firms: Towards a Typology of Entrepreneurial Decision-Makers

1. Introduction

Small and medium sized enterprises (SMEs) play a key role in the modern market economy. The success of small firms is too a large extent dependent upon strategic decision-making practices (Robinson & Pearce, 1983). Strategic decisions made by small and medium sized business entrepreneurs form the heart of entrepreneurship and can therefore be considered as essential for the dynamics in the economy.

Surprisingly, little is known about the decision-making process within SMEs. Past strategic decision-making research focuses mostly on the 'procedural rationality' of decisions in large multinational firms (Brouthers et al. (1998). These processes are often complex, involve multiple actors and are frequently the result of politics (e.g. Eisenhardt & Zbaracki, 1992). However, there is a feeling among many researchers (e.g. Papadakis et al., 1998, Brouthers, 1998; Beattie, 1999; Gilmore and Carson, 2000) that the decision-making processes of independent entrepreneurs (owners/directors of SMEs) and managers of large firms differ, which implies that many of the strategic decision-making models may not be suitable for explaining strategic decisions in SMEs. Busenitz & Barney (1997) assert that entrepreneurs are more susceptible to the use of decision-making biases and heuristics than managers in large organizations, which implies that there is indeed a distinct decision-making process present in small firms. Other studies focused on the distinction between entrepreneurs and non-entrepreneurs in terms of cultural differences (McGrath et al., 1992), studied the degree of comprehensiveness between entrepreneurs and professional managers (Smith et al., 1988), or highlighted the differences of strategic decision-making processes between entrepreneurs and owner managed firms (Mador, 2000) and provided further evidence for the distinctions between large and small firms.

Despite the valuable contributions the above-mentioned studies have made, there is an implicit assumption underlying these studies that should be further explored. In drawing a sharp distinction between entrepreneurs and managers many authors seem to suggest that all entrepreneurs are closely alike. Although it has been recognized that there are different types of entrepreneurs (Wennekers & Thurik, 1999), no systematic research has been conducted to categorize different types of entrepreneurs and subsequently relate these types to variations in decision-making practices. This type of research is important not only for scientific reasons. If various types of entrepreneurial decision-making can be identified, anyone who has an interest in realising change in SMEs may benefit from knowing about these types. How entrepreneurs can take decision is important for various stakeholders, including suppliers trying to sell new applications and policy makers in their design of policy interventions.

In this study we try to fill the gap in literature. The main goal is to develop a typology of different types of entrepreneurial decision-makers. On the basis of two qualitative pilot studies, we conducted a telephone survey in which 646 small and medium-sized firms participated. The results of our study provide insight in five distinct types of entrepreneurs that differ significantly with respect to their decision-making practices. In the next section we describe the theoretical background of our study. Subsequently, the methodology is explained and the results are presented. The paper ends with a discussion and limitations of the study and provides directions for future research.

2. Theoretical background

Strategic decisions are crucial to the viability of firms and are defined as "intentional choices or programmed responses about issues that materially affect the survival prospects,

wellbeing and nature of the organization” (Schoemaker, 1993:107). They guide the organization into the future and shape its course. For more than 40 years, scholars in various academic disciplines have recognized the importance of the topic, resulting in a broad variety of literature. We do not intend to provide the reader with an extensive overview of the available literature on decision-making. Interested readers are referred to the seminal articles of Eisenhardt & Zbaracki (1992), Schoemaker (1993), Schwenk (1995) and Hendry (2000) that present excellent overviews of the literature. Yet, we do feel it necessary to briefly sketch out some of the main features of the existing body of knowledge.

In most studies, two perspectives are dominant: the rationality/bounded rationality perspective and the political perspective. In the rational perspective it is argued that decision-making is a rational purposive process, in which actors know exactly what they want because they have carefully collected information, developed alternatives and selected the best alternative possible to fully maximize their utility (March & Simon, 1958; Allison, 1971). However, individuals have cognitive limitations and cannot oversee all the consequences of their choices, meaning that “people act intentionally rational, but only limitedly so” (Simon, 1957: xxiv). In the rational model, strategic decisions are often taken by a single authoritarian individual (Schoemaker, 1993). In the political perspective it is argued that multiple actors with conflicting goals enter the decision arena. Individuals tend to form coalitions to have their interests taken care of (Eisenhardt & Zbaracki, 1992). Other, partly overlapping, perspectives that have been identified in the literature are the garbage can model (Eisenhardt & Zbaracki, 1992), the organizational and contextual view (Schoemaker, 1993). Hendry (2000) argues that these streams of research are ‘traditional’ perspectives in which actions (or changes) follow logically from decisions taken at some point earlier in time. He introduces two divergent perspectives that are posed as a critique to the traditional perspective: (1) the action perspective, in which decisions are used to motivate and mobilize resources for actions that have already been chosen (2000: 959) and (2) the interpretative perspective, where decisions are located, articulated and ratified, “bringing it forward to the present, and claiming it as the decision that has just been made” (2000: 961).

With disregard to the valuable contribution each of these perspectives has made, it appears that many of the studies presented in these overviews concentrate on decision-making practices in large firms. This may be due to the fact that the most dominant perspectives, the rational and political perspective, may be less valid for really small entrepreneurial firms. In these firms, there is less room for politics since the entrepreneur makes the decisions individually and there are few coalitions to be built. Small firms also tend to be less rational in their decision-making processes (Rice & Hamilton, 1979 in Robinson & Pearce, 1984; Brouthers et al., 1998; Byers & Slack, 2001). We feel that the context for strategic decision-making in small firms clearly differs from the context in large firms for at least three reasons. Firstly, entrepreneurs face a more hostile or uncertain environment in their decision-making activities (Hambrick & Crozier, 1985; Covin & Slevin, 1989). They do not have access to extensive information such as managers of large firms. Managers of large firms tend to be backed up by staff members to continuously scan the environment and gather information (Busenitz & Barney, 1997). Secondly, the entrepreneurial environment is dynamic and complex (Covin & Slevin, 1991). Although this may also apply to large firms, the effects of dynamism and complexity seem to be stronger for smaller firms (Busenitz & Barney, 1997). Large firms often develop decision-making routines that simplify the process of decision-making for managers. Entrepreneurs do not develop such routines and often act on the basis of opportunism (Gartner et al., 1992). They tend to make decisions on the basis of biases and heuristics (Busenitz & Barney, 1997). Furthermore, in a more dynamic and complex environment it is believed that the comprehensiveness (or rationality) of strategic decision processes tends to be lower (Fredrickson, 1984; Fredrickson & Mitchell, 1984). Thirdly, entrepreneurs are often believed

to have specific characteristics that influence the decision-making process (Brouthers et al., 1998; Mador, 2000) and are distinct from other people (Low & MacMillan, 1988). Entrepreneurs are “decisive, impatient, action oriented individuals” (Smith et al., 1988: 224) that have been called ‘rugged individualists’ (McGrath et al., 1992). Empirical studies have demonstrated, for instance, that entrepreneurs are less comprehensive in their decision-making activities than managers from larger firms (Smith et al., 1988). A large empirical study by McGrath et al. (1992) also provided evidence for some of the unique cultural features of entrepreneurs compared with career professionals. Their results showed that entrepreneurs did indeed favour individualism, did not mind taking risks, were not egalitarians, and were more motivated to make money. Similarly, Busenitz and Barney (1997) also claim that entrepreneurs and managers clearly differ from each other. One of the key differences relates to the way entrepreneurs perceive and think about risk. They tend to generalize easier from limited experience and are often overconfident that they will succeed.

Although the studies that have explicitly separated entrepreneurs from managers of large firms have been valuable to our understanding of some of the key characteristics of entrepreneurs, we feel that the idea that entrepreneurs “share a predictable set of values” which distinguishes them from other people (McGrath et al., 1992), is somewhat unsatisfying. It is implied that all entrepreneurs are alike. While this may not be the intention of these studies, we feel that it is important to identify distinct types of entrepreneurial decision-makers. Given the variety in small firms we think that there may be multiple types of entrepreneurial decision-makers in these firms. In a case study of strategic behaviour among 20 small and medium-sized exporting businesses in Canada, Julien et al. (1997) identified three distinct types of small business and concluded that small business indeed do not behave like a homogenous group. In our study we include several variables on the basis of which we try to categorize small firms on the basis of their decision-making behaviour. These variables are described and operationalized in the next section.

3. Methodology

Sample

For the current study we used survey data that have been collected by the Dutch research organisation EIM Small business research. The survey focused on entrepreneurs in small and medium-sized enterprises who had taken at least one important decision in the past three years. The decision could be related to any innovation or project that was discontinuous (out of daily routine) and perceived to be important. The survey aimed to identify and select such entrepreneurs for a large-scale qualitative research into the nature of entrepreneurial decision-making (results forthcoming). As part of telephone survey, questions were asked on the characteristics of the entrepreneur and the selected decision.

The data were collected by means of computer-assisted telephone interviewing (CATI) among 1,200 SMEs within the Netherlands. The sample consisted of Dutch firms with less than 100 employees covering eight industries: manufacturing, construction, trade, hotel and catering, transport, financial services, business services and other services (like beauty parlours, fitness centres and hairdressers). The firms were equally distributed across the eight sectors, i.e. 150 small firms in each sector. The size class of a firm was measured by full-time equivalents of employees. The distribution of sample firms across size classes is as follows: 0 to 4 employees 25,6%, 5 to 9 employees 15,0%, 10 to 19 employees 28,9%, 20 to 49 employees 12,8% and 50 to 99 employees 17,8%.

About 60% of the interviewed respondents had taken an important decision in the past three years. Because outlying and incomplete cases were skipped from the analysis, we could eventually use 646 respondents as a basis for our classification. All these respondents were responsible for the management of the day-to-day business and the

strategic decisions of the firm. The median age of respondents was 44 years (range: 21-76). Almost 88% of respondents were men and 13% have a university degree.

We have to remark that our data are not representative of the business population in the Netherlands. For example, EIM (2004) shows that 5,2% of the small firms belong to the hotel and catering industry whereas 12,5% of the small firms in the sample used for this paper represent this industry. This means that small firms in the hotel and catering industry are over-represented in the sample. Also the size class distribution is not representative for the population. According to EIM (2004) approximately 90% of the business population in the Netherlands has less than ten employees. However, the sample consists of 41,6% firms in this size class. One should notice when reading this paper that the descriptive statistics presented later on provide no reliable estimation of population figures.

Measures

In the survey, entrepreneurs were asked to answer a range of questions for his/her most important decision made in the past three years. Basically we asked for a range of characteristics based on current literature (see below) and two pilot studies we conducted in the past two years (Gibcus & Van Hoesel, 2003; 2004). Both pilot studies consisted of in-depth interviews. The first study had an exploratory character. Focusing on recent decisions of strategic importance, we tried to recover what the process in decision-making in small firms looks like. The interview script was inspired by Mintzberg et al. (1976) and included questions such as: How did the idea come along? How did you experience complexity? How many alternatives did you consider? The second pilot was of a more confirmatory nature. We wanted to expand and hypothesize our findings from the first pilot study and again conducted interviews with entrepreneurs. These interviews offered us insight in the decision-making process and some of its key characteristics.

Most theories concerning the decision-making process (Mador, 2000; Mintzberg et al., 1976 and Papadakis et al., 1998) gravitate around models of decision-making, which comprise the entrepreneur, the environment and characteristics of the strategic decision itself. During the in-depth interviews in our pilot studies we also noticed that these were the key aspects. In our survey we captured these three subjects as well. For the current study we used nine variables to distinguish between different types of entrepreneurial decision-makers. All variables, except one, were measured with dichotomous questions (see table 1).

[TABLE 1 ABOUT HERE]

Using dichotomous questions is not undecidedly disadvantageous. Such simple questions generally result in better response rates (Churchill, 1999). Besides, respondents are asked for actual facts. Therefore a better reliability and decreased risk of common-method variance may be expected.

The first variable measures the *frequency of decision-making*. We asked the respondents how many decisions they have taken in the last three years. In both pilot studies this was a significant characteristic. We noticed that some entrepreneurs were frequently taking decisions whereas others only took decisions when they really had to. The frequency of decision-making would actually indicate a certain kind of pro-activity and was therefore included in our analysis.

Second, we accounted for the influence of other persons (e.g., family, employees or business relations). In this way we checked to what extent entrepreneurs take decisions *independent* from other persons. Sexton & Bouwman (1985) state that entrepreneurs need autonomy and dominance and are not strongly absorbed by needs for support from others, or conformity to the norms of others. According to McGrath et al. (1992) entrepreneurs are rugged individualists. Their research suggests that entrepreneurs favour independent action

and separation from groups and clans. Yet, our pilot studies revealed that entrepreneurs can actually quite differ on their degree of independence.

The third variable to be included was *confidence*. Here we could dispose of a question that asked if the entrepreneur was convinced about the value his/her decision or still had doubts. In the theoretical background we already discussed that small business entrepreneurs generalize easier from limited experience and are often overconfident that they will succeed. Entrepreneurs have higher levels of self-confidence compared to the general population (Levander & Raccuia, 2001) and perceive their decisions as infallible (Hambrick & Crozier, 1985). In all, entrepreneurs may vary in the extent to which they are confident about a decision.

The fourth variable related to the *ambition* of the entrepreneur. During the telephone interview we mainly talked about an important decision that had been taken in the past. However, at the time of data collection, ambitious entrepreneurs were identified as those respondents that were about to make new decisions for radical plans in the near future. Ambition could be another variable that distinguishes various types of decision-makers. Entrepreneurs are generally more motivated than career professionals (McGrath et al., 1992). In Beattie (1999) there appeared to be a never-ending search for new ideas and opportunities in order to stay ahead of the game.

The fifth variable we selected for our analysis relates to *information search*. Entrepreneurs in our database indicated if they had actively searched for information to argue and support their decision. Opportunity recognition and information search are often considered to be the first critical steps in the entrepreneurial decision-making process (Christensen et. al., 1994, Shane & Venkatamaran, 2000). Entrepreneurs with limited experience may use simplified decision models to guide their search, while the opposite may be the case with experienced entrepreneurs (Gaglio, 1997). Cooper et al. (1995) found that novice entrepreneurs sought more information than entrepreneurs with more entrepreneurial experience, but they searched less in unfamiliar surroundings. Further, entrepreneurs having high levels of confidence sought less information. Over all entrepreneurs can differ in their behaviour of acquiring information and tapping from contacts that provide them with a flow of information relating to opportunities.

Sixth, respondents had indicated if they had considered various *possibilities* (alternatives) before taking the decision. The reason for selecting this variable was already mentioned in the theoretical background. Strategic decision-makers in small firms do not have access to extensive information such as managers of large firms. Moreover, Busenitz & Barney (1997) state that entrepreneurs do not have all the time in the world to reconsider all possibilities. Decision-makers generally are not looking for the best or optimal, but for a satisfying solution of a decision task (Simon, 1986). Large firms are, in terms of sales and number of employees, far more rational than small firms (Brouthers et al., 1998).

The seventh variable indicated whether the entrepreneur perceived any risks during his decision-making process. This variable indicates his/her *risk-taking propensity*. Some entrepreneurs are risk-averse while others love to take risks. Since decisions must be made within a constrained environment and as it is almost impossible to have all the information needed, a major goal of decision analysis could be to reduce uncertainty (Harris, 1998). Knight (1921) differentiates risks as measurable whereas uncertainty is immeasurable; hence there is no insurance for a business decision. Risk-taking propensity is an individual's willingness to take or to avoid risks in decision-making (Jackson et al., 1972).

The next variable deals with *problems* or *bottlenecks* that the entrepreneur encountered during his decision-making process. It was measured if problems or bottlenecks were present or not. Our pilot studies revealed that on their way to a final decision, entrepreneurs possibly can vary in the problems or bottlenecks that they face, like financing, licenses or contracts (Gibcus and Van Hoesel, 2004).

Finally, it is possible that the entrepreneur was influenced by the *economic situation* when making his decision. A simple self-rated measure about this phenomenon was present in our database. Entrepreneurs are faced with a rapidly changing and fast-paced competitive environment, which places demands on organisations to actively interpret opportunities and threats when making strategic decisions (Dess et al., 1997). At the same time today's rapidly changing markets offer little assurance that a decision will not soon prove inappropriate or obsolete (Dickson, 1992). The economic situation is possibly a pull or push factor why the entrepreneur has to take a decision.

Analysis

To derive a typology of decision-makers we first performed cluster analyses. Cluster analysis is the generic name for a wide variety of procedures that can be used to create a classification (Aldenderfer & Blashfield, 1989). Its primary goal is to partition respondents based on a set of specified characteristics (Hair et al., 1995). It is important to note that cluster analysis, unlike most parametric statistical techniques, does not explicitly provide a clearly acceptable or unacceptable solution (Dess & Davis, 1984).

Following the established practice in cluster analysis, our cluster variables were first standardized. Because the cluster analysis is known to be sensitive to outliers, the data were examined for outlying observations. Values exceeding +3.0 and -3.0 may be considered as potential outliers (Hair et al., 1995). After removing outliers, and taking missing values into consideration, we had 646 observations at our disposal for our analysis. Initially we performed a hierarchical cluster analysis. There are several hundreds of clustering methods available in the literature (see Milligan and Cooper, 1987 for a detailed discussion on various clustering methods and their applicability in various situations). Milligan and Cooper (1987) conclude that Ward's method generally provides excellent cluster recovery; therefore we have chosen to use this method.

After that we used the initial centroid¹ estimates from Ward's method to perform K-means cluster analyses (non-hierarchical). This two-step procedure generally provides more stable and better cluster solutions (Milligan & Sokol, 1980) and allows for a test of robustness of various competing cluster solutions (Hair et al., 1995).

The next step consisted of analyses of variance to assess the validity of our cluster solution. Validity is demonstrated by analysing significant differences on variables that have not been used to develop the clusters (Hair et al., 1995). Finally, we aimed to further profile the taxonomy of entrepreneurial decision-makers by analysing differences across industries and size classes.

4. Results

Descriptive statistics

Before we discuss the results of our cluster analysis the means and correlations of all relevant variables were calculated. The means and correlations of all relevant variables are shown in table 2.

[TABLE 2 ABOUT HERE]

On average the entrepreneurs in our sample take between two or three decisions every three years. This means that roughly said they take one important strategic decision each year. Almost a quarter of the entrepreneurs indicated that they took their decision

¹ The centroid is the average value of the objects contained in the cluster on each of the variables making up each object's profile (Green et al., 1988).

independent from others. They did not let anyone interfere with their decision-making process. Nearly 50% of our entrepreneurs can be regarded as ambitious, i.e. they have novel ideas that possibly will lead to an important decision in the (near) future. Searching for information is rather important to the entrepreneur. Two out of three entrepreneurs searched for information. Furthermore, entrepreneurs seem to be rather risk avoiding. It turns out that only 35% of the entrepreneurs in our sample indicated they had taken some amount of risk. Of course, more comprehensive conclusions about risk-behaviour would require a benchmark with similar figures for other types of persons (e.g., professionals). Finally, a surprisingly large amount of entrepreneurs answered they had to deal with one or more problems during their decision-making process.

93% of the respondents displayed a significant degree of confidence. Therefore, we expect that this variable will not play a significant role in cluster analysis. If we perform cluster analysis, including confidence, ANOVA shows us that this variable is not significant. For this reason this variable is excluded from our cluster analysis and will not be presented hereafter.

Cluster analysis

The initial hierarchical cluster analysis using Ward's method based on squared Euclidean distances suggested between three and six clusters (as evidenced by visual inspection of the dendrogram and fusion coefficients). Next, following Milligan & Sokol (1980), k-means cluster analysis was performed for four different cluster solutions (three, four, five and six groups) to further improve the robustness of the cluster solutions and to enable a test of stability. Hair et al. (1995) use Kappa, the chance corrected coefficient of agreement, to assess which cluster solution is most stable. Their decision criterion is to maximize Kappa. The three, four, five and six cluster solutions produced the following Kappa's: 0.783, 0.784, 0.878 and 0.806. Thus, this suggested a solution of five clusters as being most stable. The percentage of respondents in each cluster is: cluster one 21.5% (n=139), cluster two 20.7% (n=134), cluster three 19.5% (n=126), cluster four 32.5% (n=210) and cluster five 5.7% (n=37).

In table 3 the five types of decision-makers in small firms are described and compared in more detail. For every indicator a summary score is presented.

[TABLE 3 ABOUT HERE]

The first group distinguishes itself from the others because of the high amount of risk taking propensity. Almost every entrepreneur has to deal with risks. These decision-makers are willing to take risks in decision-making. There is a significant positive correlation of 0.23 (table 2) between the risk taking propensity and the problems that have to be faced during the decision-making process. So, it is not surprisingly that these decision-makers also have a high score on the presence of problems or bottlenecks. The entrepreneurs in this group also emphasize an above average amount of ambition and information search. Because the most striking finding is the large amount of risk that the entrepreneur perceives, we labelled this cluster as *daredevils*.

The second group of decision-makers take their decisions independently. They seem to dislike other persons to be involved or influence the decision-making process. This group also reports less problems and bottlenecks. This group scores relatively low on several variables, e.g. information search, consideration of possibilities and the risk-taking propensity. This is not surprising, because these entrepreneurs seem to be straightforward and know what they want to achieve. We marked this group as *lone rangers*.

When we take a closer look at the third group we see that the economic situation is an important factor here. The entrepreneurs in this group have to deal with many problems.

They have the highest scores on information search and the consideration of possibilities. It looks like these entrepreneurs rather seek for alternatives. For this reason we called the entrepreneurs in this group *doubtful minds*.

Respondents in the fourth group have the lowest frequency of decision-making. Nearly 90% of the entrepreneurs have taken one to three decisions in the last three years. Contrary to the entrepreneurs in second group (lone rangers) all entrepreneurs in the fourth group were influenced by other persons. Although they always consult other persons they score the lowest on the consideration of other possibilities. Only 5% of the entrepreneurs perceived any risks involved. Apparently the help of other persons is enough to take the definitive decision and to reduce perceived risks: *informers' friends*.

In the fifth group respondents follow their own path in decision-making. All entrepreneurs make frequent decisions. On average they take more than one decision a year. At the time of speaking 60% of the entrepreneurs in this group had one or several ideas that possibly will lead to another decision. It seems that entrepreneurs in this group are involved in decisions with a high degree of newness, because a relatively large amount of entrepreneurs face problems during their decision-making process. This group distinguishes itself from other groups by their high frequency of decision-making, so they are labelled as *busy bees*.

Validity

Milligan & Cooper (1987) mention as a minimum requirement for validity clusters should differ significantly on the variables, which were used to derive the typology. One-way analyses of variance (ANOVA) were performed to test for significant differences. A Least Significance Difference (LSD) test was performed to investigate which clusters are not significantly different.

[TABLE 4 ABOUT HERE]

The ANOVA procedure in table 4 indicates that the five clusters were significantly different from each other. The LSD-test shows that on some of the variables types of decision-makers are not different. For example the daredevils, doubtful minds and informers' friends have a similar frequency of decision-making. In general however, the results confirm significant differences across the clusters.

To further assess validity one should check if the types of decision-makers differ on aspects that have not been used in the cluster analysis. Chi-square tests were performed to decide whether there were significant differences on a selection of other indicators, including perceived increase in sales and profits, the amount of investment made, the satisfaction of the entrepreneur, and innovation characteristics (if the entrepreneur had recently introduced new-to-the-industry products or processes, and if he/she had formal cooperation agreements to develop innovations with other parties).

As for the perceived impact on sales and profit we found no significant differences between the five types of decision-makers. Almost 46% of the decision-making entrepreneurs identified a growth of sales and/or profit. For 68.7% of the entrepreneurs these results met their expectations. For the other indicators, differences were significant and well interpretable, providing support for the validity of our clusters. In table 5 these results are presented.

[TABLE 5 ABOUT HERE]

First, the various types of decision-makers differ significantly in the amount of investment that came along with the decision. Busy bees are the biggest spenders. They are closely

followed by the daredevils. Nearly 73% of the busy bees have invested 100,000 euro or more and exactly 68% of the daredevils have spent this amount of money because of their decision. Whereas 46% of the other three types invest on average more than 100,000 euro.

Second, there appear to be differences amongst the types of decision-makers when it comes to their degree of satisfaction. The majority, more than 90%, of the decision-makers are very glad with their decisions. The daredevils seem to be the least satisfied. Approximately 7% of the daredevils are not satisfied at all and another 7% are more or less satisfied.

Third, we looked for possible differences between the five types of decision-makers considering the nature of their innovation processes. For all groups a majority of decision-makers did not introduce any products or processes that were new to their industry. From table 5 we observe that risk-taking decision makers and the frequent decision-makers introduce new products or process to the market more frequently. They also are the most cooperative groups. Doubtful minds are most reserved. Only 18% of these decision-makers introduced new products or process to the market.

Industry and size class differences

In this study we wanted to pay special attention to possible industry and size class differences concerning decision-making in small firms. The five types of decision-makers significantly differed across size classes ($p < 0.05$). The hypothesis that the typology of decision-makers differs across industries cannot be supported on a 5% level ($p > 0.05$), but at the 10% level we found support for this hypothesis. Descriptive statistics are shown in table 6.

[TABLE 6 ABOUT HERE]

Daredevils have mainly concentrated their small firms in financial and business services. The business services are the most popular among this group of decision-makers. Lone rangers have the smallest share in business services. They prefer industries like hotel and catering, transport and financial services. The doubtful minds seem to avoid the other services industry. In other industries the share of presence varies between 10.3% (hotel and catering) and 15.1% (transport). Contrary to the doubtful minds we notice that the informers' friends are least present in the transport industry, but have the highest share in other services. The number of busy bees is rather small. Although we presented percentages in table 6 we will not discuss the results for this type of decision-makers.

Compared to the other types of decision-makers lone rangers have relatively small firms in terms of number of employees. Nearly 50% of the lone rangers are represented in the size classes 0 to 4 and 5 to 9 employees. Busy bees have the highest number of employees.

5. Conclusions and implications

As far as we know this study is the first to present an empirically derived typology of entrepreneurial decision-makers. On the basis of a large-scale survey among 646 entrepreneurs, we were able to develop and validate a typology involving five types of decision-makers: daredevils, lone rangers, doubtful minds, informers' friends and busy bees.

In a scientific context, an important conclusion is that our results confirm that most current studies in the field of decision-making, with their focus on comparing practices in large and small firms, provide a too narrow view of how decisions are actually taken. Our survey revealed that some basic features of decision-makers differ substantially, including the frequency, independence, ambition, search for information, consideration of other options, risk taking propensity, presence of bottlenecks and influence of the economic

situation. Of course, studies that compare large and small firms are very valuable by stressing a need for separate studies into decision-making in small firms, and providing valuable directions for factors that may be used to describe types of decision-making as well as its determinants and consequences. Future research should further explore these issues. In the next section we will elaborate on this.

As mentioned in the introduction section, a typology of entrepreneurial decision-making is important for anyone who wants to bring change within a firm or group of firms. Various groups of stakeholders can be identified here. First, suppliers of any product, service or technology could take notice and try to identify how entrepreneurs take decisions. Second, one could think of policy makers who strive to push SMEs towards any kind of behaviour (e.g., innovation, making investments, recruiting underprivileged employees). Third, even employees who want to 'sell' their ideas to their boss might benefit from knowing what type of decision-maker is managing their daily work.

Each type of decision-maker has particular characteristics one should account for when trying to exert influence. For example, daredevils are most happy to take risks and willing to try new things. Here, new product offerings or policy interventions, which deviate from what is common, would be more fruitful than in any other cluster of decision-makers. Lone rangers are less used to having others (family, friends, etc.) influence a decision. In comparison they avoid taking risks but are not very happy to consider alternative options either. Here, any offering would probably have to be very much in line with entrepreneurs' preferences, feelings and opinions. Doubtful minds are most eccentric in their consideration of alternative options when making decisions. Combined with their low propensity to take risks, this type of entrepreneur might be sensitive to rational arguments and new alternatives in case of doubt. As for informers' friends and busy bees, one could easily think of similar characteristics that are important in trying to influence decision-making.

6. Limitations and suggestions for future research

Of course this study had some limitations that should be the subject of future work. We first recall that our variables were all dichotomous questions. In future research one should check if the five clusters are robust to new and more elaborated measures for the characteristics involved. Thus, forthcoming research should try to validate our findings with other measures and data.

The same applies to a number of dimensions we did not include in our survey, including personality characteristics like locus of control, optimism and self-efficacy. Including them in future survey would reveal to what extent prevailing types of decision-makers are similar.

The typology provides a basis for more detailed research into the circumstances and characteristics that precede decision-making. For example, the significant differences of the types across industries and size classes suggest that a wide range of environmental variables (e.g., market turbulence, technological development, scientific progress, institutional change and new legislation, etc.) can give rise to prevailing types of decision-making. Future research should reveal the contingencies of what type of decision-making is most favourable, and also what the consequences of decision-making are in the longer run. From this type of research decision-making entrepreneurs might benefit themselves.

Another suggestion includes the question of how one might identify various types of decision-makers in practice. Since most characteristics of decision-makers are personality- or decision-bound, those stakeholders that attempt to account for the various types would have a tough job. Future studies should develop rules-of-thumb to identify the various types of decision-makers in practice.

References

- Aldenderfer, M.S. and Blashfield, R.K. (1989), *Cluster analysis*, Newbury Park: Sage Publications
- Allison, G.T. (1971), *Essence of Decision: Explaining the Cuban Missile Crisis*, Boston: Little, Brown
- Beattie, R. (1999), *The creative entrepreneur: a study of the entrepreneur's creative processes*, www.babson.edu/entrep/fer/papers99/III/III_B
- Brouthers, K., Andriessen, F. and Nicolaes, I. (1998), Driving blind: Strategic decision-making in small companies, *Long Range Planning*, Vol. 31(1): 130-138
- Busenitz, L., and Barney, J. (1997), Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making, *Journal of Business Venturing*, Vol. 12: 9-30
- Byers, T. and Slack, T. (2001), Strategic Decision-Making in Small Businesses Within the Leisure Industry, *Journal of Leisure Research*, 33(2): 121-136
- Christensen, P.S., Madsen, O.O. and Peterson, R. (1994), Opportunity identification: The contribution of entrepreneurship to strategic management, Denmark: Aarhus University Institute of Management
- Churchill, G.A. (1999), *Marketing research: methodological foundations*, Fort Worth: The Dryden Press
- Cooper, A.C., Folta, T.B. and Woo, C. (1995), Entrepreneurial Information Search, *Journal of Business Venturing*, 10: 107-120
- Covin, J.G. and Slevin, D.P. (1989), Strategic Management of Small Firms in Hostile and Benign Environments, *Strategic Management Journal*, 10: 75-87
- Covin, J.G. and Slevin, D.P. (1991), A Conceptual Model of Entrepreneurship as Firm Behavior, *Entrepreneurship Theory & Practice*, 16(1): 7-25
- Dess, G., Lumpkin, G. and Covin, J. (1997), Entrepreneurial strategy making and firm performance: tests of contingency and configurational models, *Strategic Management Journal*, 18(9): 677-695
- Dess, G.G. and Davis, P.S. (1984), 'Porters's generic strategies as determinants of strategic membership and organizational performance', *Academy of Management Journal*, 27: 467-488
- Dickson, P. (1992), Toward a general theory of competitive rationality, *Journal of Marketing*, 56 (January): 69-83
- EIM (2004), Kleinschalig ondernemen 2004 (Small-scale entrepreneurship 2004), Zoetermeer: EIM
- Eisenhardt, K.M. and Zbaracki, M.J. (1992), Strategic Decision Making, *Strategic Management Journal*, 13: 17-37
- Fredrickson, J.W. (1984), The Comprehensiveness of Strategic Decision Processes: Extension, Observations, Future Directions, *Academy of Management Journal*, 27(3): 445-466
- Fredrickson, J.W. and Mitchell, T.R. (1984), Strategic Decision Processes: Comprehensiveness and Performance in an Industry with an Unstable Environment, *Academy of Management Journal*, 27(2): 399-423
- Gaglio, C.M. (1997), *Opportunity identification: Review, critique and suggested search directions*, In J. Katz (Ed.) *Advances in entrepreneurship, firm, emergence, and growth*, Greenwich: JAI Press, 3: 139-202
- Gartner, W.B., Bird, B.J. and Starr, J.A. (1992), Acting as If: Differentiating Entrepreneurial From Organizational Behavior, *Entrepreneurship Theory & Practice*, 16(3): 13-31
- Gibcus, P. and Van Hoesel, P.H.M. (2003), *De beslissende ondernemer in het MKB (The decision-making entrepreneur in small firms)*, Zoetermeer: EIM

- Gibcus, P. and Van Hoesel, P.H.M. (2004), Transforming an idea into a strategic decision in SMEs, Zoetermeer: EIM
- Gilmore, A. and Carson, D. (2000), The demonstration of a methodology for assessing SME decision making, *Journal of Research in Marketing*, 2(2): 108-124
- Green, P.E., Tull, D.S. and Albaum, G. (1988), Research for marketing decisions, Englewood Cliffs, NJ: Prentice Hall
- Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.G. (1995), *Multivariate data analysis*, Englewood Cliffs, NJ: Prentice Hall
- Hambrick, D.C. and Crozier, L.M. (1985), Stumblers and Stars in the Management of Rapid Growth, *Journal of Business Venturing*, 1: 31-45
- Harris, R. (1998), Introduction to decision-making, <http://www.virtualsalt.com/crebook5.htm>
- Hendry, J. (2000), Strategic Decision Making, Discourse, and Strategy as Social Practice, *Journal of Management Studies*, 37(7): 955-977
- Jackson, D., Hounay, L. and Vidmar, N. (1972), A four-dimensional interpretation of risk taking, *Journal of Personality*, 13 (2): 483-501
- Knight, F. (1921), *Risk, uncertainty and profit*, Boston: Houghton Mifflin
- Low, M.B. and MacMillan, I.C. (1988), Entrepreneurship: Past Research and Future Challenges, *Journal of management*, 14(2): 139-161
- Mador, M. (2000), Strategic Decision Making Process Research: Are Entrepreneur and Owner Managed Firms Different, *Journal of Research in Marketing & Entrepreneurship*, 2(3): 215-234
- March, J.G. and Simon, H.A. (1958), *Organizations*. New York: Wiley
- McGrath, R., MacMillan, I. and Scheineberg, S. (1992), Elitists, riks-takers, and rugged individualists? An exploratory analysis of cultural differences between entrepreneurs and non-entrepreneurs, *Journal of Business Venturing*, 7: 115-135
- Messick, D. and Bazerman, M. (1996), Ethical leadership and the psychology decision making, *Sloan Management Review*, 37 (Winter): 9-22
- Milligan, G.W. and Cooper, M.C. (1987), 'Methodology review: Clustering methods', *Applied Psychological Measurement*, 11: 329-254
- Milligan, G.W. and Sokol, L. (1980), 'A two stage clustering algorithm with robust recovery characteristics', *Educational and Psychological Measurement*, 40: 755-759
- Mintzberg, H. (1999), The design school: reconsidering the basic premises of strategic management, *Strategic Management Journal*, Vol. 11 (3): 171-195
- Mintzberg, H., Raisinghani, D. and Theoret, A. (1976), 'The structure of unstructured decision processes', *Administrative Science Quarterly*, 21: 246-275
- Papadakis, V., Lioukas, S. and Chambers, D. (1998), Strategic decision-making processes: the role of management and context, *Strategic Management Journal*, Vol. 19: 115-147
- Robinson, R.B. and Pearce, J.A. (1983), Impact of formalized strategic planning on financial performance in small organizations, *Strategic Management Journal*, 4(3), 197-207
- Robinson, R.B. and Pearce, J.A. (1984), Research thrusts in Small Firm Strategic Planning, *Academy of Management Review*, 9(1), 128-137
- Schoemaker, P.J.H. (1993), Strategic Decisions in Organizations: Rational AND Behavioural Views, *Journal of Management Studies*, 30(1), 107-129
- Schwenk, C.R. (1995), Strategic Decision Making, *Journal of Management*, 21(3), 471-493
- Sexton, D. and Bowman, N. (1985), The entrepreneur: A capable executive and more, *Journal of Business Venturing*, 1(1): 129-140
- Simon, H. et al. (1986), *Decision making and problem solving*, Washington, DC: National Academy Press
- Simon, H.A. (1957), *Administrative Behaviour*. New York: MacMillan

Smith, K.G., Gannon, M.J., Grimm, C. and Mitchell, T.R. (1988), Decision Making Behavior in Smaller Entrepreneurial and Larger Professionally Managed Firms, *Journal of Business Venturing*, 3: 223-232

Wennekers, A.R.M. and Thurik, A.R. (1999), Linking entrepreneurship and economic growth, *Small Business Economics*, Vol. 13: 27-55

Table 1 Variables used in the analysis

(1)	Frequency of decision-making	The number of decisions that the entrepreneur has taken in the last three years
(2)	Independence	The entrepreneur was influenced by other persons (like employees, family or business contacts) in his/her decision-making process; coded 1, otherwise, coded 0 (independence has the value 0)
(3)	Confidence	The entrepreneur was (very) convinced about his/her decision; coded 1, otherwise, coded 0
(4)	Ambition	The entrepreneur had at the moment of the telephone interview new ideas or plans that possibly will lead to a new (radical) decision; coded 1, otherwise, coded 0
(5)	Information search	The entrepreneur searched for information; coded 1, otherwise, coded 0
(6)	Consideration of other possibilities (rationality)	The entrepreneur considered other possibilities or alternatives; coded 1, otherwise, coded 0
(7)	Risk taking propensity	The entrepreneur dealt with risks; coded 1, otherwise, coded 0
(8)	Problems/bottlenecks	The entrepreneur encountered problems or bottlenecks during his decision-making process; coded 1, otherwise, coded 0
(9)	Economic situation	The entrepreneur was influenced by the economic situation when making his decision; coded 1, otherwise, coded 0

Table 2 Means, standard deviations and correlation between variables (n=646)

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Frequency of decision-making	2.78	2.19								
(2) Independence	0.77	0.42	0.03							
(3) Confidence	0.93	0.26	0.01	-0.01						
(4) Ambition	0.47	0.50	0.15**	-0.01	-0.04					
(5) Information search	0.66	0.47	0.07	0.17**	-0.01	0.10*				
(6) Consideration of other possibilities	0.50	0.50	0.11**	0.14**	0.09*	0.13**	0.19**			
(7) Risk taking propensity	0.35	0.48	0.15**	0.09*	0.03	0.09*	0.07	0.19**		
(8) Problems/bottlenecks	0.64	0.48	0.18**	0.14**	0.07	0.11**	0.09*	0.24**	0.23**	
(9) Economic situation	0.44	0.50	0.05	0.09	0.03	0.03	0.07	0.16**	0.07	0.13**

** p < 0.01, * p < 0.05

Table 3 Comparison of the five types of decision-makers in small firms (n=646)

	(1) Daredevils	(2) Lone rangers	(3) Doubtful minds	(4) Informers' friends	(5) Busy bees	Total
Frequency of decision-making						
- 1 to 3 decisions	67.7%	80.5%	84.1%	88.5%	0.0%	76.4%
- 4 or more decisions	32.3%	19.5%	15.9%	11.5%	100.0%	23.6%
Independence	2.9%	100.0%	4.0%	0.0%	0.0%	23.2%
Ambition	66.9%	47.8%	23.0%	46.7%	59.5%	47.4%
Information search	77.0%	49.3%	85.7%	59.5%	59.5%	66.3%
Consideration of other possibilities	65.5%	33.6%	88.9%	25.7%	64.9%	50.5%
Risk taking propensity	98.6%	22.4%	23.8%	4.8%	45.9%	34.7%
Problems/bottlenecks	87.8%	46.3%	80.2%	45.7%	81.1%	63.6%
Economic situation	46.0%	32.1%	92.9%	20.5%	40.5%	43.7%

Table 4 Significance testing of differences between clusters (n=646)

	F-value	P-value	Clusters not different*
Frequency of decision-making	263.478	0.000	2=3, 2=4, 3=4
Independence	1,124.797	0.000	1=3, 1=4
Ambition	14.463	0.000	1=5, 2=4, 2=5
Information search	13.687	0.000	1=3, 2=5, 4=5
Consideration of other possibilities	51.339	0.000	1=5, 2=4
Risk taking propensity	190.653	0.000	2=3
Problems/bottlenecks	29.807	0.000	1=3, 1=5, 2=4, 3=5
Economic situation	60.776	0.000	1=5, 2=5

* Unless indicated, all groups significantly differ from each other on a 5% level using the Leas Significance Difference test.

Table 5 Comparison of the five types of decision-makers on several indicators (n=646)

	(1) Daredevils	(2) Lone rangers	(3) Doubtful minds	(4) Informers' friends	(5) Busy bees	Total
<i>amount of investment</i>						
< 10.000 euro	11.8%	19.8%	24.5%	21.3%	12.1%	19.0%
10.000 to 25.000 euro	3.4%	11.2%	8.5%	5.5%	6.1%	6.8%
25.000 to 100.000 euro	16.8%	22.4%	23.6%	26.2%	9.1%	21.9%
100.000 to 500.000 euro	32.8%	31.0%	25.5%	24.0%	27.3%	27.8%
500.000 to 2.5 million euro	25.2%	11.2%	15.1%	20.2%	33.3%	19.2%
> 2.5 million euro	10.1%	4.3%	2.8%	2.7%	12.1%	5.2%
<i>entrepreneur satisfaction</i>						
yes	85.4%	91.7%	90.5%	93.8%	91.9%	90.8%
more or less	7.3%	6.0%	6.3%	4.3%	8.1%	5.9%
no	7.3%	2.3%	3.2%	1.9%	0.0%	3.3%
<i>introduction of new products or processes that are new for industry</i>						
yes	38.4%	23.9%	30.4%	18.1%	37.8%	27.2%
no	61.6%	76.1%	69.6%	81.9%	62.2%	72.8%
<i>cooperation at renewal processes</i>						
yes	65.2%	31.3%	56.3%	48.1%	64.9%	50.9%
no	34.8%	68.7%	43.7%	51.9%	35.1%	49.1%

Table 6 Distribution of the five types of decision-makers across industry and size class (n=646)

	(1) Daredevils	(2) Lone rangers	(3) Doubtful minds	(4) Informers' friends	(5) Busy bees	Total
<i>Industry</i>						
Manufacturing	12.2%	8.2%	13.5%	13.8%	16.2%	12.4%
Construction	11.5%	11.9%	11.9%	10.0%	5.4%	10.8%
Trade	9.4%	11.9%	13.5%	11.4%	8.1%	11.3%
Hotel and catering	9.4%	18.7%	10.3%	11.4%	16.2%	12.5%
Transport	10.1%	13.4%	15.1%	9.5%	16.2%	11.9%
Financial services	16.5%	14.9%	14.3%	15.7%	16.2%	15.5%
Business services	22.3%	7.5%	14.3%	10.5%	16.2%	13.5%
Other services	8.6%	13.4%	7.1%	17.6%	5.4%	12.1%
<i>Size class</i>						
0 to 4 employees	20.1%	29.9%	20.6%	20.0%	21.6%	22.3%
5 to 9 employees	12.2%	19.4%	10.3%	14.8%	2.7%	13.6%
10 to 19 employees	28.1%	24.6%	29.4%	34.3%	18.9%	29.1%
20 to 49 employees	11.5%	12.7%	15.9%	13.3%	18.9%	13.6%
50 to 99 employees	28.1%	13.4%	23.8%	17.6%	37.8%	21.4%